Commentary: Monetary Policy Implications of Greater Fiscal Discipline

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Central banks are often accused of being obsessed with inflation. This is untrue. If they are obsessed with anything, it is with fiscal policy. Why should this be so?

Discussions of fiscal policy often originate with central banks. This conference is organized by one; the Bank of England was created to help the British government finance its deficit; and it was in the Federal Reserve Bank of Minneapolis' *Quarterly Review* that in 1981, Tom Sargent and Neil Wallace published their well-known article "Some Unpleasant Monetarist Arithmetic." Their basic proposition was that if the fiscal authority sets its budgets independently of the monetary authority, then the latter might be forced to tolerate a higher inflation rate than it would prefer in order to generate sufficient revenue from seigniorage to satisfy the government budget constraint.

I have never found this proposition very convincing. The logic is compelling, and the original paper contains a number of other interesting and subtle points. But, as an empirical matter, the proposition is of little current relevance to the major industrial countries. This is for two reasons. First, seigniorage—financing the deficit by issuing currency rather than bonds—is very small relative to other sources of revenue. Second, over the past decade or so, governments have become increasingly committed to price stability. In some cases, they have transferred the power over monetary policy to an

independent central bank with the specific objective of price stability. In others, they have staked their reputation on meeting a pre-announced inflation target. This sea change in the conventional wisdom about price stability leaves no room for inflation to bail out fiscal policy. It also suggests that John Taylor could have written a companion paper entitled: "Fiscal Policy Implications of Greater Monetary Discipline."

In his admirably clear paper, John Taylor makes three main points. First, a lower debt-to-GDP ratio reduces the incentive for governments to generate surprise increases in inflation in order to reduce the real burden of the debt. Hence, greater fiscal discipline raises the credibility of monetary policy. As Taylor points out, the theoretical arguments are clear, the empirical evidence much less so. I shall return to this link between inflation, credibility, and the fiscal position below.

Taylor's second main point concerns the role of monetary policy during the transition to lower deficits, a highly relevant issue in both this country and my own. Should a deficit reduction package lead the central bank to lower short-term interest rates? Taylor suggests that the answer to this question is a straightforward yes. Nominal interest rates should fall by the reduction in the real interest rate which results from the lower deficit. This argument, however, hinges critically on the assumption that a fiscal consolidation will lower the long-run real interest rate in the economy. Although this may be true of the United States, it is not obviously the case in small open economies, including several among the G-7, in a world where capital is highly mobile. Rather, there is more compelling evidence that it is the *aggregate* fiscal deficit of the G-10 or the Organization for Economic Cooperation and Development (OECD) as a whole, which influences real interest rates. Of greater importance, however, is the observation that central banks should not cut interest rates today in response to a deficit reduction package which, even if enacted in current legislation, will lower deficits only in the future. Expectations of lower deficits will reduce expected future short-term real rates, and hence the current long-term real rate. But the central bank should reduce short-term nominal interest rates only

when the lower deficits have actually materialized and produced the anticipated reductions in short-term real rates. Moreover, there is no reason to change the way monetary policy is set. Changes in real interest rates are only one of many factors which must be taken into account when setting short-term rates. Markets would expect a central bank committed to its inflation target to wait before adjusting short rates. A central bank which cut short rates in anticipation of lower future real rates might endanger its own credibility, thus offsetting the fall in long rates resulting from the fiscal consolidation.

Taylor's third main point is that a serious attack on budget deficits would constrain the future use of fiscal policy as a counter-cyclical instrument, thus necessitating a greater responsiveness of monetary policy to deviations of GDP from trend. Although I fully share John's view that the focus of fiscal consolidation should be on the structural deficit, I do not believe that there is likely to be a major problem in practice. The principle should be to allow the cycle to affect the deficit through changes in the cyclical components of revenue and taxes. The automatic stabilizers will come into play whatever the legislators try to impose, and a balanced budget amendment which failed to take into account cyclical fluctuations in the deficit would quickly fall into disrepute. Greater transparency in fiscal policy, as recommended in the paper by Alan Auerbach and embodied in the 1994 New Zealand Fiscal Responsibility Act, would not only be a natural partner for increased transparency of monetary policy, but would also be more likely to focus attention on the underlying budgetary problem than an arbitrary rule.

I want to comment briefly on the relationship between inflation, credibility, and the fiscal position. John Taylor is certainly correct to argue that, in the major industrialized countries, it is not the revenue contribution of seigniorage when *expected* inflation is positive, but periodic episodes of *unexpected* inflation which have reduced debt-to-GDP ratios. In the G-7, seigniorage revenue is small. Table 1 shows that seigniorage has typically been much less than 1 percent of GDP in each decade since the war, and the figure has fallen even further with the reduction in inflation over the past

Table 1
G-7 Seigniorage as Percent of GDP

Year	Canada	France	Germany	Italy	Japan	UK	U.S.	G-7[a]
1950s	0.3	1.5	1.1	1.9	0.7	0.5	0.2	0.7
1960s	0.4	1.1	0.6	1.6	1.2	0.4	0.3	0.7
1970s	0.7	0.7	1.0	3.2	1.3	0.8	0.5	1.0
1980s	0.2	0.4	0.3	1.8	0.7	0.1	0.4	0.5
1990-94	0.1	-0.2	0.6	1.2	0.3	0.2	0.4	0.4
Average	0.5	0.7	0.7	1.9	0.8	0.4	0.4	0.7

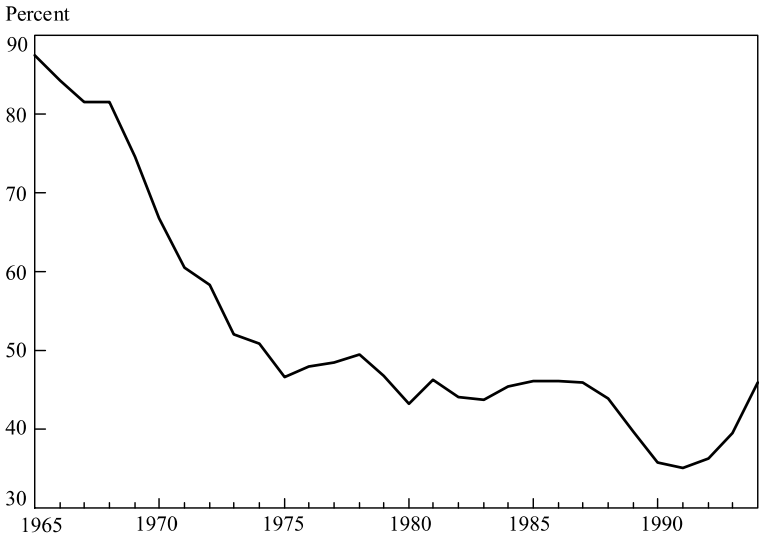
Sources: Grilli, Masciandaro, and Tabellini (1991) and Hudson and Nolan (1995)
[a]GDP weighted average

decade. Only in Italy is seigniorage over 1 percent of GDP. In contrast, episodes of unexpectedly high inflation in the G-7 have led to sharp falls in the ratio of debt to GDP. As an example, Chart 1 shows the evolution of the ratio of national debt to GDP and the inflation rate in the United Kingdom since 1960. The periods in which the debt-to-GDP ratio fell most sharply were the 1970s and late 1980s following a rise in inflation. The size of the deficit, itself, also affected the ratio—especially in the late 1960s and early 1990s—as can be seen from Chart 2. But a few years of unexpectedly high inflation can do wonders for debt ratios.

As Taylor points out, the credibility hypothesis implies that lower deficits should be associated with lower rates of inflation as the pressures to reduce the debt burden by inflation are reduced. This was not true in the 1980s, neither in the United States, as shown in the paper, nor in the rest of the G-7. Table 2 shows the results of a pooled regression for the G-7 of inflation over five-year periods on the debt-to-GDP ratio at the beginning of the period and country dummies. The initial debt-to-GDP ratio, rather than the ratio of the current deficit to GDP, is the appropriate measure of the fiscal position. For each country the sample period is 1960 to 1993, giving

Chart 1

Panel 1: UK National Debt as a Percent of GDP (1965-1994)



National Debt data refer to end March.

Panel 2: UK RPI Inflation (1965-1994)

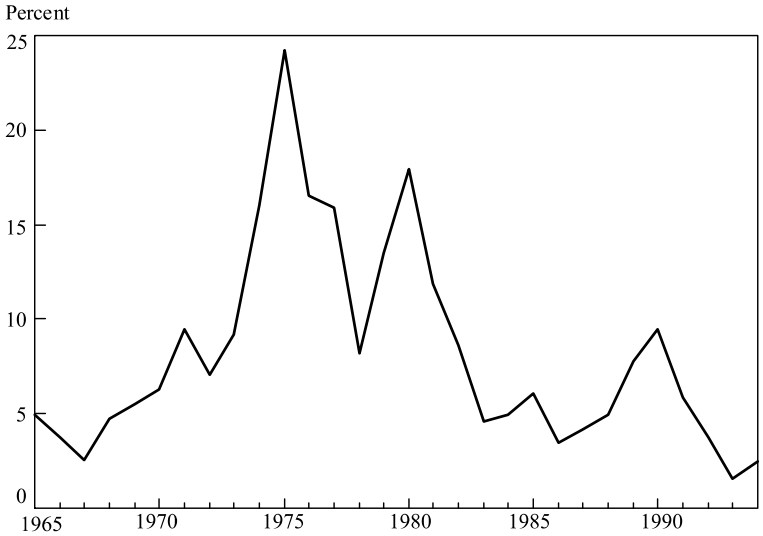
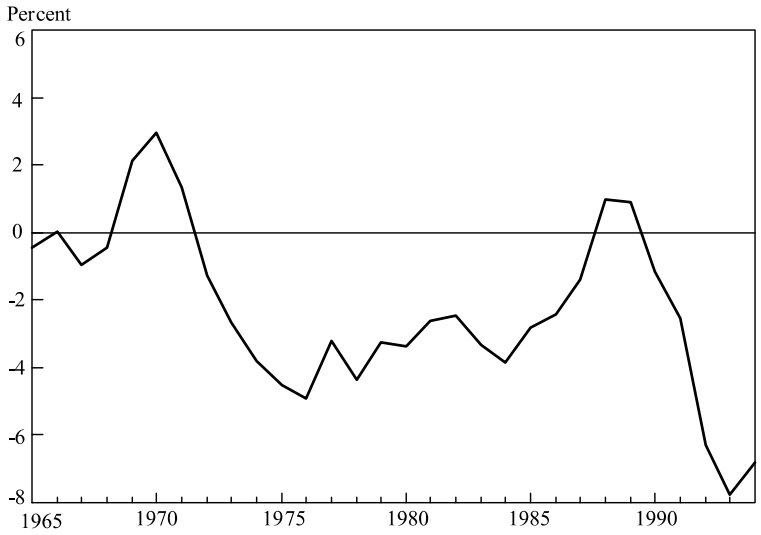


Chart 2

UK General Government Financial Surplus/Deficit as a Percent of GDP (1965-1994)



a total of 49 observations. No significant relationship is discernible, and the sign on the debt term is negative, although the credibility hypothesis implies that it should be positive. Do these results contradict the view that high debt levels undermine resistance to inflation? Not necessarily, is the answer. In my view, the explanation of the lack of any clear empirical link from debt to inflation is that there was a change in the intellectual basis of macroeconomic policy in several countries during the sample period, a move toward the pursuit of price stability and a sustainable fiscal position—"sound policies" in fact. These were successful in reducing inflation in the 1980s and 1990s, although fiscal consolidation had not yet reduced significantly the stock of debt which remained at high levels.

One consequence of this change in monetary policy regime is that the attempt to bring inflation down—resulting in lower inflation than expected—led to a fiscal problem. A shift to a regime with a

Table 2
Regression of Inflation[(a)]
on the Gross Debt: GDP Ratio[(b)]
Sample period 1960-1993[(c)]

	Coefficient	t-ratio
Debt: GDP ratio	-0.058	-2.2
Constant	11.74	5.4
Dummy variables (constant +/-)		
United States	-3.94	-2.2
Germany	-6.70	-3.4
France	-3.04	-1.6
Italy	0.36	0.2
Japan	-4.69	-2.3
Canada	-3.09	-1.7

$R^2 = 0.29$

[(a)]Average inflation rate over five years

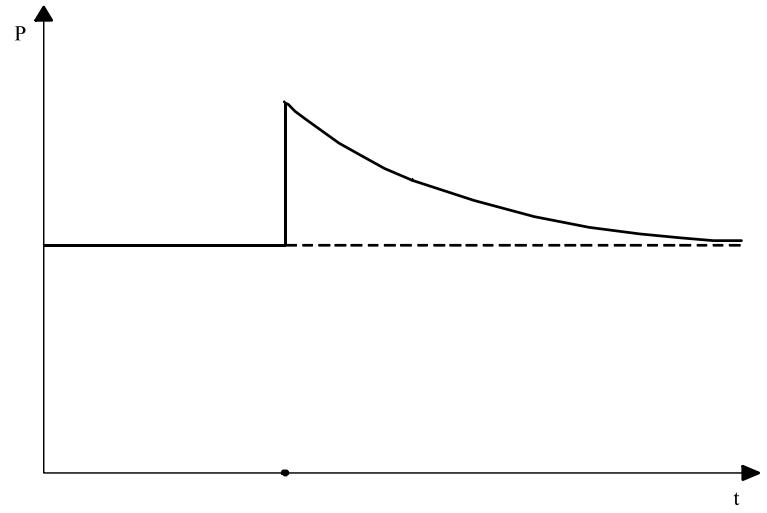
[(b)]Debt: GDP ratio at beginning of five-year period

[(c)]Split into seven sub-samples of five years each (except 1990-1993). One set of observations for each G-7 country, giving 49 observations in all.

lower average inflation rate but one in which the new policy does not have total credibility immediately raises the effective real interest rate on government debt. This creates a need for extra revenue to finance the higher debt-financing costs incurred in the transitional period during which credibility is being established. For this reason the current situation in many countries, with governments committed to permanently low inflation, suggests to me that there are, as I mentioned earlier, fiscal policy implications of greater monetary discipline. The details of this are set out in an appendix to my discussion which, turning Sargent and Wallace on their heads, I have entitled, "Some Unpleasant Fiscal Arithmetic."

The argument is straightforward. A successful policy of disinflation slows the growth of nominal GDP, but does not reduce the

Figure 1
Primary Surplus Required for Constant Debt to GDP Ratio



required interest payments on conventional nominal debt until the new policy acquires credibility. Expected inflation will decline more slowly than actual inflation. The level of the primary surplus consistent with a constant debt-to-GDP ratio will rise in the short term by an amount proportional to the initial debt-to-GDP ratio and the reduction in the average inflation rate. In the longer run, the primary surplus can return to its original level when inflation expectations have adjusted, as shown in Figure 1. For countries with a poor track record of inflation that process may take some time. To take an example, suppose that the initial debt-to-GDP ratio was 50 percent and stable, and the change in monetary policy regime lowered the average inflation rate from 6 percent a year to 2 percent a year. Then to hold the debt-to-GDP ratio constant would require an immediate jump in the primary surplus of no less than 2 percent of GDP. If expectations adjusted halfway to the new regime after five years, then the increase in the primary surplus would still be 1 percent of GDP after five years. Given this unpleasant fiscal arithmetic, what

might be done? The first, and most obvious, step is to finance more of the deficit by the issue of index-linked bonds. These would enable the government to borrow at the original real rate of interest. The second is to speed up the rate at which credibility in the new monetary regime is built up. For example, in countries without one, the creation of an independent central bank would appear, if not irresistible, then at least very attractive.

It is clear that the commitment to, and adoption of, "sound policies" has not been confined to a small select group of countries, as any observer of the International Monetary Fund Interim Committee meetings could testify. Acceptance that macroeconomic policies should be set with their long-term impact on the price level and public finances firmly in mind has had an effect on both monetary and fiscal policy. Greater discipline in one area of policy has had implications for the other. Contraction of budget deficits has posed questions for monetary policy, as John Taylor has described. But it is arguable that an even greater challenge is the consequence of a commitment to price stability for fiscal policy. Credibility is not easily acquired, and a change of monetary policy regime can create what I have called unpleasant fiscal arithmetic.

The test of the commitment of governments to sound policies will be whether they can combine a monetary policy dedicated to price stability with a fiscal policy consistent with sustainable levels of public debt. Some countries have reached this position; others find soundness a quality difficult to achieve in two dimensions. In Europe, especially, success in stabilizing both the monetary and fiscal position is not yet assured. The next few years will be crucial in determining whether the move to sound policies was a temporary fashion or an indefinite change in the approach to economic policy.

I started by asking why central banks appear obsessed with fiscal policy. The answer is that central banks do not operate in a vacuum. They are accountable to public opinion. In recent years, the greater public acceptance of the goal of price stability has been, to use a favorite central banking word, welcome. But it has led to unpleasant fiscal arithmetic. This has compounded the existing fiscal problems.

And since soundness in two dimensions has been rare, it raises the fear that the commitment to price stability will, in the future, come under threat as unexpected inflation looks to be an attractive expedient for reducing the debt burden. Historical experience would reinforce that concern. It is vital, therefore, that unpleasant fiscal arithmetic not lead us back to unpleasant monetary arithmetic.

Appendix:
Some Unpleasant Fiscal Arithmetic

The transition from a regime of inflation at an average rate of π_0 to a rate of π_N leads to some unpleasant fiscal arithmetic. I shall ignore the revenue generated by seigniorage, and, for the time being, assume that deficits must be financed by conventional nominal bonds rather than by index-linked government bonds. All such instruments will be assumed to be one-period bonds. The dynamics of government debt is given by the differential equation:

$$\text{(A1)} \qquad \dot{D} = -P + r^N D$$

where D denotes the stock of government debt, P the level of the primary surplus, and r^N the interest rate on one-period bonds. Let lower case variables denote the ratio of the corresponding upper case variables to GDP. Then (A1) may be written as

$$\text{(A2)} \qquad \dot{d} = d(r^N - g - \pi) - p.$$

Define the real interest rate as

$$\text{(A3)} \qquad \dot{d} = d[(r - g) + (E\pi - \pi)] - p.$$

Suppose that at $t=0$ there is a regime change from $\pi = \pi_0$ to $\pi = \pi_N$. This defines the change in behavior of the central bank. But suppose that the central bank cannot achieve immediate credibility for the new regime in the sense that expectations of inflation adjust only slowly to the new regime. In particular, assume that expectations adjust exponentially and converge asymptotically to the new inflation rate. Then at time t, expected inflation is given by

$$\text{(A4)} \qquad E\pi_t = \pi_N - (\pi_N - \pi_0)\, e^{-\alpha t}.$$

In order to hold the debt-to-GDP ratio constant at its original level d_0, the primary surplus must follow the path

(A5) $$p_t = (r - g)\, d_0 + (\pi_0 - \pi_N)\, d_0\, e^{-\alpha t}.$$

Hence, the change in the primary surplus necessary for a constant debt-to-GDP ratio is

(A6) $$\Delta p_t = (\pi_0 - \pi_N)\, d_0 e^{-\alpha t}.$$

This profile is shown in Figure 1.

Tax smoothing arguments would suggest that this profile for the primary surplus would not be optimal. In general, it would be better to raise taxes or cut expenditures so as to increase the primary surplus by a constant proportion of GDP. Denote the increase in the primary surplus as a proportion of GDP by z. Then

(A7) $$p(t) = p(0) + z.$$

The dynamics of the debt-to-GDP ratio is given by

(A8) $$d(t) = \beta_0 + \beta_1\, d(t) + \beta_2\, d(t) e^{-\alpha}$$

where

(A9) $$\beta_0 = -(\, p\,(0) + z)$$
$$\beta_1 = r - g$$
$$\beta_2 = \pi_0 - \pi_N$$

Unfortunately, this differential equation for the debt-to-GDP ratio has no closed-form solution. Different values of z imply different paths for d. For sufficiently large values of z, d declines without limit, and for sufficiently small values, d increases without limit. At intermediate values of z, d may rise and then fall, or asymptote to a value given by $d_\infty = d_0 + z/(r - g)$.

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